

## Amendments to the Claims

1-14. (Canceled)

15. (Currently amended) A mixture of primer pairs for performing multiplex polymerase chain reaction, wherein each of the primer pairs is present in the mixture at a predetermined ratio to each other, wherein the ratio of the molar concentrations of the primer pairs is described by:

$$C_A = C_L (L_A \div L_L)^2$$

wherein  $C_A$  is the concentration of primers for an amplicon A; wherein  $C_L$  is the concentration of primers for the longest amplicon; wherein  $L_A$  is the length in base pairs of the amplicon A; and wherein  $L_L$  is the length in base pairs of the longest amplicon; and wherein  $L_A$  is not equal to  $L_L$ .

16. (Original) The mixture of claim 15 which comprises at least 4 primers.

17. (Original) The mixture of claim 15 which comprises at least 6 primers.

18. (Original) The mixture of claim 15 which comprises at least 8 primers.

19. (Original) The mixture of claim 15 which comprises at least 10 primers.

20. (Original) The mixture of claim 15 which comprises at least 12 primers.

21. (Original) The mixture of claim 15 which comprises at least 14 primers.

22. (Original) The mixture of claim 15 which comprises at least 16 primers.

23. (Original) The mixture of claim 15 which comprises at least 18 primers.

24. (Original) The mixture of claim 15 which comprises at least 20 primers.

25. (Currently amended) A mixture of primers for performing multiplex polymerase chain reaction, comprising at least six primers which are present in the mixture at a predetermined ratio to each other, wherein the ratio of the molar concentrations of the primers is described by:

$$C_A = C_L (L_A + L_L)^2$$

wherein  $C_A$  is the concentration of primers for an amplicon A; wherein  $C_L$  is the concentration of primers for the longest amplicon; wherein  $L_A$  is the length in base pairs of the amplicon A; and wherein  $L_L$  is the length in base pairs of the longest amplicon; and wherein  $L_A$  is not equal to  $L_L$ .

26. (Previously presented) The mixture of claim 25 which comprises at least 8 primers.

27. (Previously presented) The mixture of claim 25 which comprises at least 10 primers.

28. (Previously presented) The mixture of claim 25 which comprises at least 12 primers.

29. (Previously presented) The mixture of claim 25 which comprises at least 14 primers.

30. (Previously presented) The mixture of claim 25 which comprises at least 16 primers.

31. (Previously presented) The mixture of claim 25 which comprises at least 18 primers.

32. (Previously presented) The mixture of claim 25 which comprises at least 20 primers.